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THE PROGRESS OF SCIENCE

LETHARGIC ENCEPHALITIS

Dr. Simon Flexner, director of the laboratories of the Rockefeller Institute for Medical Research, has presented to the National Academy what is known concerning a disease that has recently attracted much attention. In an abstract now published in the *Proceedings* Dr. Flexner states that in 1916 there arose in Vienna and possibly in other places in the Austrian Empire, cases of a peculiar disease a prominent symptom of which is lethargy. Because of this feature, which amounts at times to a condition of profound and prolonged "sleepiness," the disease receives the popular name of sleeping sickness. And yet it was quickly recognized as being wholly distinct from the well-known African sickness, the inciting microorganism of which is a trypanosome. The structural or histologic basis of the Austrian disease is an inflammation, chiefly located in the gray matter of the base of the brain, or technically an encephalitis. Because of the peculiar symptoms and of the lesions, von Economo of Vienna who first described the disease gave it the name of lethargic encephalitis.

About two years later, that is, in 1918, outbreaks of the same disease were reported from England and France. A little later the disease appeared in the United States, and published reports now indicate that it has a wide distribution over the world. When the disease was first recognized in Vienna, it was supposed to be a form of food (sausage) poisoning; and the early cases in England were attributed to botulism. This mistake is quite explicable: among the prominent symptoms are paralyses of the ocular and facial muscles, which arise also in food poisoning. Because of war conditions, both the countries mentioned were using preserved foods to an unusual degree; hence the inference.

Because of the accompanying paralysis and subsequently because of certain peculiar characteristics of the histological changes in the brain, a discussion arose whether the disease was not merely a peculiar form of poliomyelitis or infantile paralysis, which has prevailed epidemically and fitfully in Europe and America for a decade or longer.

The Rockefeller Institute has had wide experience with poliomyelitis during ten or twelve years; and since the winter of 1919 material from numbers of cases of encephalitis have been referred to it. On the basis of the studies made, it is quite safe to say that the diseases—lethargic or epidemic encephalitis and epidemic poliomyelitis—are distinct. A striking difference relates to the transmissibility of the one to lower animals (monkeys) and not of the other. Moreover, the actual histological changes or lesions in the two diseases show striking differences, both of distribution in the central nervous organs and in minute structure. Lethargic encephalitis is surely an infectious disease, but its inciting microbe is still undiscovered.

The question arises whether encephalitis has been observed before, or is to be considered as being a new disease, in the sense that it had never before been recognized and described. A brief account exists of an outbreak of a so-called "sleeping sickness" in the neighborhood of Tübingen in Germany in the year 1712; and what appears to be a similar malady more widely distributed in Austria, Italy, and Switzerland in 1890. The first appearance of the present epidemic and the location of the 1890 outbreak coincide territorially. It is not possible to state absolutely that the disease originated this time in Vienna; under war conditions its occurrence in outlying rural districts might well have been overlooked. But there is nevertheless basis for the view proposed tentatively, namely, that an endemic focus of a peculiar and specific form of encephalitis exists in Southeastern Europe, from which the present wide occurrence of the disease took origin.

THE WIRELESS TELEPHONE

THE practical value of research in the field of pure science was vividly demonstrated in a lecture on "Scientific Discovery and the Wireless Telephone," presented at the American Museum of Natural History by Dr. Robert W. King, engineer of the American Telephone and Telegraph Company. Dr. King illustrated his lecture by demonstrations and models both of discoveries leading up to the wireless telephone and of the wireless telephone itself as employed during the war for airplane communication. The exhibit of models and apparatus installed in connection with the lecture will remain at the museum during May and June. It was arranged by the American Telephone and Telegraph Company and the Western Electric Company in cooperation with the American Museum of Natural History and the New York Academy of Sciences. The lecture and exhibit are the first of a series included in the peace-time program launched by the National Research Council. They have already been presented at Washington, where they aroused marked interest.

Dr. King's lecture traced the history of radio telephony as a development of scientific theories which, at the time of their discovery, seemed wholly removed from the every-day life of the world, but which a little later were to revolutionize that life. With the work of Hertz in the last half of the nineteenth century the broad general principles underlying the new science of radio communication were completely established. It has remained for scientific men of our own generation to devise the means for controlling the production of the electromagnetic waves in such a manner as to make possible the sending of intelligible messages over long distances and for the receiving of such messages. In this connection there are countless devices, all of the utmost practical value, yet almost without exception adaptations of discoveries in the field of pure science.

Comparing the working of the wireless telegraph with that of the wireless telephone, it will be seen that to send dots and dashes out through space all that is necessary is to interrupt the formation of the electric waves at the proper times, while in transmitting actual speech not only must the amplitude of the electric waves be varied continuously rather than abruptly, but the electric waves must be so modulated as to transmit the particular sound waves sent out by the voice. Such an oscillatory electric current upon its arrival at the receiving station, is caused to pass through a telephone receiver which accordingly emits the words of the voice in the same fashion as in the common telephone. In this way a reproduction of human speech can be carried